

Application No. 10/081,699
Amendment dated July 21, 2006
Reply to Office Action of March 21, 2006

REMARKS

Status Of Application

Claims 1-8 and 10-23 are pending in the application; the status of the claims is as follows:

Claims 3, and 10-21 are withdrawn from consideration.

Claims 1, 2, 4-8, 22, and 23 are rejected under 35 U.S.C. § 102(e) as being clearly anticipated by U.S. Patent No. 6,524,759 B1 to Sugimoto et al. (“Sugimoto”).

Claim Amendments

Claims 1, 5, 22, and 23 have been amended to more particularly point out and distinctly claim the invention. These changes do not introduce any new matter.

35 U.S.C. § 102(e) Rejection

The rejection of claims 1, 2, 5-8, 22, and 23 under 35 U.S.C. § 102(e) as being anticipated by ‘759, is respectfully traversed based on the following.

Sugimoto shows a reversible recording medium including a reversible light absorbing layer 2 and a cholesteric reflection layer 3. Layer 3 is composed of liquid crystal materials that may include a cholesteric phase (col. 6, line 25 – col. 10, line 65). Layer 2 may contain liquid crystalline material, but only has a “guest host” for dichroic dyestuff (col. 11, lines 37-39). There is no suggestion in Sugimoto that layer 2 may have a cholesteric phase.

A process for writing to layer 2 is shown in Figure 2 (col. 14, lines 27-63). Again, there is no suggestion the reversible light absorbing layer ever exhibits a cholesteric phase. A process for writing to cholesteric reflection layer 3 is shown in Figure 3. As can be seen

from Figure 3, color is written by heating above T_6 ($a \rightarrow b$), gradually cooling through the cholesteric phase ($b \rightarrow e_B$, e_G or e_R) and rapidly cooling at the point where the selected color is reached (f_B , f_G or f_R , respectively) (col. 15, line 24 – col. 16, line 19). Another heating step to T_5 (d) is used to return layer 3 to a crystalline phase.

In contrast to the cited references, claim 1 includes:

- a first heating process for heating the liquid crystal in a crystal phase to a first temperature that allows the liquid crystal to exhibit a cholesteric liquid crystal phase or an isotropic phase to form an image;
- a first cooling process for rapidly cooling the liquid crystal from the first temperature; and
- a second heating process for heating at least a part of an area of the recording medium to a second temperature, wherein:
 - in the second heating process, the liquid crystal is heated to at most a second temperature that is lower than the first temperature and said second temperature causes the at least part of an area where the image has been formed by the first heating process to discolor or develop color without external pressure, and the second temperature causes the at least part of an area to exhibit a cholesteric fixed phase after cooling.

Figure 2 of Sugimoto does not show “heating the liquid crystal in a crystal phase to a first temperature that allows the liquid crystal to exhibit a cholesteric liquid crystal phase or an isotropic phase to form an image” because there is no suggestion that reversible light absorbing layer 2 is capable of those states. Figure 3 of Sugimoto only uses a second heating process to return cholesteric reflection layer 3 to the white, crystalline phase. There is no suggestion in either process of a “second heating process … wherein … the second temperature causes the at least part of an area to exhibit a cholesteric fixed phase after cooling.” Furthermore, the process of Figure 3 is specifically cited in the background (Par. [0005]) as one of the less desirable prior art processes.

To anticipate, a reference must show, expressly or inherently, every limitation of the claim. MPEP §2131. As noted above, Sugimoto does not show every limitation of claim 1. Therefore, claim 1 is patentably distinct from the cited references. Claims 2 and 5-8 are dependent on claim 1, and thus include every limitation of claim 1. Thus, the cited

references do not anticipate claims 2 and 5-8, and claims 2 and 5-8 are patentably distinct from the cited references.

Also in contrast to the cited references, claim 22 includes:

- a first heating process for heating the liquid crystal in a crystal phase to a first temperature that allows the liquid crystal to exhibit a cholesteric liquid crystal phase or an isotropic phase to form an image;
- a first cooling process for rapidly cooling the liquid crystal from the first temperature; and
- a second heating process for rapidly heating at least a part of an area of the recording medium to a second temperature causing the liquid crystal to transit to a cholesteric liquid phase before the liquid crystal transitions to a crystal phase, wherein
 - in the second heating process, the liquid crystal is heated to at most a second temperature that is lower than the first temperature and said second temperature allows the area where the image has been formed by the first heating process to disolor or develop color without external pressure.

As noted above, the cited references do not show or suggest “a first heating process ...that allows the liquid crystal to exhibit a cholesteric liquid crystal phase or an isotropic phase to form an image’ and “a first cooling process for rapidly cooling the liquid crystal from the first temperature” with “a second heating process ... said second temperature allows the area where the image has been formed by the first heating process to disolor or develop color without external pressure.” Thus, the cited references do not show or suggest every limitation of claim 22 and claim 22 is not anticipated by the cited references.

Also in contrast to the cited references, claim 23 includes:

- a first heating process for heating the liquid crystal in a crystal phase to a first temperature that allows the liquid crystal to exhibit a cholesteric liquid crystal phase or an isotropic phase to form an image;
- a first cooling process for rapidly cooling the liquid crystal from the first temperature; and

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a second heating process for heating at least a part of an area of the recording medium to a second temperature, wherein

in the second heating process, the liquid crystal is heated to at most a second temperature that is lower than the first temperature and said second temperature causes the at least part of an area where the image has been formed by the first heating process to discolor or develop color without external pressure;

As noted above, the cited references do not show or suggest “a first heating process ... that allows the liquid crystal to exhibit a cholesteric liquid crystal phase or an isotropic phase to form an image’ and “a first cooling process for rapidly cooling the liquid crystal from the first temperature” with “a second heating process ... said second temperature allows the area where the image has been formed by the first heating process to discolor or develop color without external pressure.” Thus, the cited references do not show or suggest every limitation of claim 23 and claim 23 is not anticipated by the cited references.

Accordingly, it is respectfully requested that the rejection of claims 1, 2, 5-8, 22, and 23 under 35 U.S.C. § 102(e) as being anticipated by ‘759, be reconsidered and withdrawn.

CONCLUSION

Wherefore, in view of the foregoing amendments and remarks, this application is considered to be in condition for allowance, and an early reconsideration and a Notice of Allowance are earnestly solicited.

This Amendment does not increase the number of independent claims, does not increase the total number of claims, and does not present any multiple dependency claims. Accordingly, no fee based on the number or type of claims is currently due. However, if a fee, other than the issue fee, is due, please charge this fee to Sidley Austin LLP Deposit Account No. 18-1260.

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If an extension of time is required to enable this document to be timely filed and there is no separate Petition for Extension of Time filed herewith, this document is to be construed as also constituting a Petition for Extension of Time Under 37 C.F.R. § 1.136(a) for a period of time sufficient to enable this document to be timely filed.

Any other fee required for such Petition for Extension of Time and any other fee required by this document pursuant to 37 C.F.R. §§ 1.16 and 1.17, other than the issue fee, and not submitted herewith should be charged to Sidley Austin LLP Deposit Account No. 18-1260. Any refund should be credited to the same account.

Respectfully submitted,

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